

DOCKET NO.: 6272-0049-0 PCT



IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF:

:

Miroslav CHMELIR et al.

: GROUP ART UNIT: 1713

SERIAL NO. 09/554,090

:

FILED: JUNE 14, 2000

: EXAMINER: ZALUKAEVA, F.

FOR: METHOD FOR PRODUCING WATER-SOLUBLE OR WATER-SWELLABLE POLYMERIZATES WITH A VERY LOW RESIDUAL MONOMER CONTENT, PRODUCTS PRODUCED ACCORDING TO THIS METHOD AND THE USE THEREOF

APPEAL BRIEF

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231

SIR:

Appellants appeal the Final Rejection of Claims 13-16 and 18-31 of the above-identified application set forth in the Official Action dated July 31, 2001.

I. REAL PARTY IN INTEREST

The real party in interest is Stockhausen GMBH and Co. KG by virtue of the assignment executed on May 5, 2000. The executed assignment was forwarded to the U.S. Patent and Trademark Office on June 14, 2000.

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II. RELATED APPEALS AND INTERFERENCES

To the best of Appellants' undesigned representative's knowledge, there are no related appeals or interferences.

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### III. STATUS OF CLAIMS

Claims 13-16 and 18-31 are the only claims pending in the above-identified application.

Claims 13-16 and 18-31 are appealed.

### IV. STATUS OF AMENDMENTS

No amendments were submitted in response to the Final Rejection mailed July 31, 2001.

### V. SUMMARY OF INVENTION

The present invention relates to a process for producing a water-soluble or water-swallowable polymer or copolymer in which an acid monomer or monomers alone, or with a comonomer or comonomers is partially or completely neutralized with a basic nitrogen compound or compounds followed by free-radical polymerization of the above-mentioned monomer or monomers alone, or with a comonomer or comonomers to form a water-soluble or water-swallowable polymer or copolymer, which is subsequently heated at a temperature from 120 to 240°C. See page 4, line 24 - page 5, line 31; page 6, line 23 - page 7, line 12; page 9, lines 7-17 of the specification. The products produced in the above-mentioned process are suitable for use as flocculants, dispersants and absorbers.

### VI. ISSUES

The issues in this appeal are as follows:

A. Whether or not Claims 13-16 and 18-31 are unpatentable under 35 U.S.C. §103(a) over Chmelir (U.S. Patent 4,929,717) in view of Alexander et al (U.S. Patent 4,985,518).

## VII. GROUPING OF CLAIMS

Claims 13-16 and 18-31 do not stand or fall together. The patentability of each claim will be argued in separate paragraphs below.

## VIII. ARGUMENT

(iv). 35 U.S.C. §103(a) rejection of Claim 24.

1. In the Official Action the Examiner characterized Chmelir as disclosing a method of preparing homopolymers or copolymers that are water-soluble or water-swellaable by treating the produced gel or solution of homopolymers or copolymers with unreacted monomer or monomers with a compound that can react with the excess monomer's or monomers' double bond. The homopolymer or copolymer gel or solution with unreacted monomer or monomers may be treated using a basic amine as the compound to react with the unreacted monomer or monomers and the gel or solution is subsequently heated to partial or complete drying. The Examiner characterized the disclosure of Chmelir as differing from the present claims by neutralization of the product in the polymer stage, compared to the neutralization in the present claims at the monomer stage before polymer formation. The Examiner characterized Alexander et al as disclosing a method of preparing a water absorbing resin by neutralizing acrylic acid 70 to 100 mol% with ammonia, and/or caustic alkali and/or an amine; mixing with a water-soluble polyvinyl monomer, water and, when desired, an organic solvent. The mixture of Alexander et al is subjected to polymerization in the presence of a combination of polymerization initiators. The Examiner concludes that, because both Chmelir and Alexander et al utilize the same process of polymerizing acrylic and methacrylic monomers, and achieve a goal of low residual monomer

content, one skilled in the art would have found it obvious to first neutralize monomers before polymerization, such as done by Alexander et al, in the process of Chmelir, unless criticality of the order of performing the neutralization step is shown.

It is Applicants' position that a *prima facie* case of obviousness has not been established by the combination of references. In the Chmelir reference, a polymer or copolymer is first formed, followed by treatment of the polymer or copolymer gel or solution with a compound that can react with residual unreacted monomer's or monomers' double bond to convert the monomer or monomers into a saturated compound (see col. 2, lines 20-33 of the reference), not to neutralize the product at the polymer stage, as stated by the Examiner. In the present invention an acid monomer or monomers alone, or with a comonomer or comonomers, are partially or completely neutralized by a basic nitrogen compound or compounds and do not have the double bond reacted with to convert the acid monomer or monomers to saturated compounds. If the double bond of the acid monomer or monomers of the present invention were to be converted to a saturated compound, no polymerization or copolymerization could take place in the free radical step of the present invention, because there would be no double bond polymerization site.

The defects of Chmelir are not cured by Alexander et al, because Chmelir and Alexander et al are not combinable for the following reasons. Chmelir treats a gel or solution of formed polymers or copolymers with an amine to change the double bond of the unreacted excess monomer or monomers to form a saturated compound, while Alexander et al disclose partially or completely neutralizing acrylic acid with various compounds, among which is an amine, prior to polymerization to form the water absorbing resin. Therefore, the worker of ordinary skill in the art would not be directed to apply the drying step of Chmelir in place of the use in Alexander et

al of the heat generated in the polymerization process to evaporate water and dry the polymer or copolymer product of Alexander et al (see col. 3, lines 37-42; col. 5, lines 19-27 and col. 7, lines 53-65 of Alexander et al). Further, Alexander et al teach away from a separate heating step as in present Claim 24 "and subsequently heating said water-soluble or water-swellaable polymer or copolymer at a temperature from 120 to 240°C", because column 2, lines 1-9 and 21-22 of Alexander et al state that overheating during drying results in excessive cross-linking of the polymer or copolymer product. Thus, because Chmelir treats a gel or solution of formed polymers or copolymers with a compound, which may include an amine, to change the double bond of the excess unreacted monomer or monomers to form a saturated compound, which process is totally different from the process of Alexander et al, which partially or completely neutralizes acrylic acid prior to polymerization or copolymerization, the references are not combinable and the worker or ordinary skill in the art would not be taught to use the particular heating step of Chmelir to partially or completely dry the polymer or copolymer product of Chmelir in Alexander et al, because a separate heating step is not only not contemplated by Alexander et al, but taught away from in the disclosure of Alexander et al. Therefore, Claim 24 distinguishes over the combination of references.

## 2. Argument Against the Rejection of Claim 13 Under 35 U.S.C. §103

In addition to the arguments set forth for patentability of Claim 24 in paragraph 1 above, Claim 13 sets forth specific nitrogen compounds for use as the neutralization agent. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

## 3. Argument Against the Rejection of Claim 14 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 14

lists specific materials for use as the neutralization agent in the process. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

4. Argument Against the Rejection of Claim 15 under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 15 specifically indicates that the monomer or monomers are neutralized in a neutralization range not shown in the combination of references.

5. Argument Against the Rejection of Claim 16 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, specific acid monomers are set forth in Claim 16. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

6. Argument Against the Rejection of Claim 18 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 18 sets forth a specific comonomer to be used with the acid monomer or monomers of Claim 24. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

7. Argument Against the Rejection of Claim 19 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 19 specifically recites a bi- or polyfunctional monomer to be used in addition to the acid monomer or monomers. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

8. Argument Against the Rejection of Claim 20 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 20 recites that the subsequent heating step is carried out at a temperature range not shown in the

combination of references.

9. Argument Against the Rejection of Claim 21 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 21 recites a specific residual monomer content of less than 50ppm. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

10. Argument Against the Rejection of Claim 22 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 22 recites a specific residual monomer content of less than 30ppm. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

11. Argument Against the Rejection of Claim 23 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 23 recites a specific residual content of acrylamide of less than 10ppm. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

12. Argument Against the Rejection of Claim 25 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 25 recites a number of specific nitrogen compounds used in the neutralization step. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

13. Argument Against the Rejection of Claim 26 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 26 recites specific acid monomers used in the process of Claim 24. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

14. Argument Against the Rejection of Claim 27 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 27 recites specific comonomers which may be used in the process of Claim 24. This is neither disclosed nor suggested by either cited reference for use in the claimed invention.

15. Argument Against the Rejection of Claim 28 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 28 sets forth a time period for the heating step not specifically set forth in the combination of references.

16. Argument Against the Rejection of Claim 29 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claims 20 and 24 set forth in paragraphs 1 and 8 above, Claim 29 recites the period of time for the heating step not specifically set forth in the combination of references.

18. Argument Against the Rejection of Claim 30 Under 35 U.S.C. §103

In addition to the arguments for patentability of Claim 24 in paragraph 1 above, Claim 30 shows a period of time for the heating step not specifically set forth in the combination of references.

19. Argument Against the Rejection of Claim 31 Under 35 U.S.C. §103

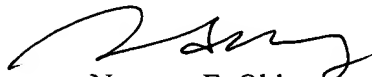
In addition to the arguments with regard to the patentability of Claims 20 and 24 set forth above in paragraphs 1 and 8, Claim 31 contains the period of time for the heating step not specifically set forth in the combination of references.



In view of the preceding arguments, Appellants respectfully request that the Examiner's rejection of Claims 13-16 and 18-31 be REVERSED.

Respectfully submitted,

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